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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/803,941	03/13/2001	Koichi Ikeshima	WATK:210	9068

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EXAMINER

DICUS, TAMRA

ART UNIT	PAPER NUMBER
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1775

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DATE MAILED: 05/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

09/803,941

Applicant(s)

IKESHIMA, KOICHI

Examiner

Tamra L. Dicus

Art Unit

1775

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 August 2001 (IDS).
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being vague and indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase "in a direction of a diameter" is confusing.

### *Claim Objections*

3. Claim 3 is objected to because of the following informalities: there is not a space between the number 0.1 and mm. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1,2, and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by USPN 4,849,275 to Hamaguchi et al.

Hamaguchi teaches a cordierite honeycomb body having excellent coatability and thermal shock resistance by coating the surface (outer wall) exhibiting a higher thermal

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expansion coefficient than that of the inner carrier containing inner walls by introducing activated alumina inside the partition walls having  $62 \text{ cells/cm}^2$  where compressive stress is applied from the outer wall (see col. 3, lines 13-20; col. 5, lines 1-10; Examples 1-2; and Table 3).

6. Claims 1-2, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by USPN 5,514,446 to Machida et al.

Machida teaches a ceramic honeycomb structural body having an outer portion and center portion comprising cells, where the inner portion of the ceramic honeycomb structural body contains a catalyst seal slurry of active alumina-ceria powders with aluminum nitride solution (see col. 6, lines 5-26) that is dried. Since the materials and process used are the same, the characteristics of claim 1 would be expected to be similar absent any evidence to the contrary.

7. Regarding claim 2, Machida further teaches a honeycomb structure body where the outer wall portion of the structure and the structure can be the same material (see col. 3, line 44+, and Figures 1 and 2).

8. At col. 2, lines 38+, the incomplete cells have an area not more than 90% of an area of the complete cells meeting the limitations of claim 6.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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10. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,629,067 to Kotani et al. in view of USPN 5,846,899 to Kumazawa et al.

Kotani teaches a ceramic honeycomb structure body comprising cells (through-holes surrounded by partition walls) and an outer wall portion (see Fig. 5), where both the inner and outer walls are of cordierite having the same thermal expansion (see col. 7, lines 24-37). Kotani further teaches an outer coating formed on the outer surface of the body to reduce cells from cracking (see col. 2, lines 28-38) but is silent to the thermal expansion coefficient of the outer coating on the body wall being larger than the thermal expansion coefficient of an inside partition wall. Kumazawa teaches a ceramic honeycomb structural body having a coating comprising a catalytic carrier of  $\gamma$ -alumina that when applied to a cordierite honeycomb body, the thermal expansion of the inner body is smaller than the thermal expansion coefficient of the outer carrier coating (which is on the outer body wall) (see Table 1, col. 3, line 65-col. 4, line 46). Kumazawa further teaches applying a compressive stress to the body (see col. 4, lines 45-50) since the outer carrier coating has a larger thermal expansion coefficient. It would be obvious to a person having ordinary skill in the art to modify the ceramic honeycomb structure body taught by Kotani to include a coating comprising a catalytic carrier of  $\gamma$ -alumina on the outer body wall in order to produce a ceramic honeycomb structure that has a larger thermal expansion coefficient on the outer wall of the structural body than the inner wall portion to provide excellent thermal shock resistance.

11. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,514,446 to Machida et al. in view of USPN 5,629,067 to Kotani.

Machida discloses the claimed invention except for the number of cell per unit area and wall thickness requirements. Kotani discloses the outer wall being thicker than the inner wall and the number of cells per unit area requirements of claims 4-5 in Example 1, Figures 4-5, and col. 6, lines 60+. It would be obvious to a person having ordinary skill in the art to modify the honeycomb structure taught by Machida to include the number of cell per unit area and wall thickness requirements for the purpose of alleviating thermal stresses which occur between the outer wall and the body, and to make the structure highly resistant to thermal shock.

12. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,514,446 to Machida et al. in view of USPN 5,629,067 to Kotani and further in view of USPN 5,346,722 to Beauseigneur et al.

Machida in view of Kotani substantially disclose the claimed invention except for a partition wall thickness of less than 0.1 mm. Beauseigneur discloses several examples of honeycomb structures having a range of the numbers of cells per unit area values and typical wall thickness requirements of claims 3-5 in catalytic converter applications at col. 3, lines 50-60. It would be obvious to a person having ordinary skill in the art to modify the honeycomb structure taught by Machida and Kotani to include the desired requirements of Beauseigneur to produce a desired honeycomb structure that exhibits efficient extruder or flow rates.

13. Regarding claim 7, it is known in the art to vary the thickness of the cell walls to because Kotani teaches the variation of wall thickness to gain desired bulk density at col. 1, lines 25-34 and col. 2, lines 5-7 in order to reduce the heat capacity and effectively control exhaust emissions thereby improving the overall efficiency of a catalytic converter.

***Conclusion***

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USPN 5,334,570 to Beauseigneur et al. teaches a honeycomb structure comprising cells and a washcoat on the outer body to decrease thermal shock resistance and corresponding increase in thermal expansion.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tamra L. Dicus whose telephone number is (703) 305-3809. The examiner can normally be reached on Monday-Friday, 7:00-4:30 p.m., alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (703) 308-3822. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-8329 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Tamra L. Dicus  
Examiner  
Art Unit 1775



DEBORAH JONES  
SUPERVISORY PATENT EXAMINER

May 17, 2002